Engineering and Operations Workgroup Study Plans

Study #1f: Feather River Flow - Stage Model Development

November 16, 2001

Goals

- Develop appropriate Feather River flow – stage model to simulate stage in the Lower Feather River at different flow rates and different channel configurations
- Develop stage-discharge relationships for existing channel (“Benchmark simulation”)

Task 1. Define desired outputs from model

- Includes:
  - Flow-stage relationship at various locations along the Lower Feather River

Task 2. Review existing models

- None known
- May be some work at DWR Flood Management or USCE for floodplain analysis
- May be some work done in support of past Instream Fishery analysis

Task 3. Review existing data

- Types of data includes:
  - Gageing station rating curves
  - Floodplain analysis background data
  - Habitat analysis background data

Task 4. Review modeling tools

- Modeling tools available
  - USCE developed HEC-2
  - USCE developed HEC-RAS
  - Numerous other models

- PHABSIM – model which may be used for habitat evaluation has a hydraulic component for flow-stage computation

Task 5. Select appropriate model or modeling tool

- Based on the results of task 1 through 4 select the appropriate model/modeling tool to create the Feather River flow stage model for this process
- Get approval from plenary group

Task 6. Collect field data for development, calibration, and verification

- Identify additional data required
- Install instrumentation as required
- Collect data

Task 7. Model Development, Calibration, and Verification

- Develop physical system definition in model
- Calibrate model
- Verify completed model

Task 8 – Integrate into modeling scheme

- Not Applicable

Task 9. Perform “benchmark” simulations

- Initial study of stage at varying flows at various points at desired locations

Products

- Flow stage model of Lower Feather River
- Existing channel flow-stage relationships as required